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EXAMINER	
CONTINO, PAUL F	
ART UNIT	**PAPER NUMBER**
2114	

DATE MAILED: 01/04/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/009,444	MEYER-GRAFE ET AL.	
	Examiner	Art Unit	
	Paul Contino	2114	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondenc address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *9 May 2002*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-24* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-24* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *9 May 2002* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference signs mentioned in the description and/or claims: 22, 23, 24, 25, 27, 28, 29, 30, and 31. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

2. The abstract of the disclosure is objected to because of being more than one paragraph in length. Correction is required. See MPEP § 608.01(b).

3. The disclosure is objected to because of the following informalities:

The attempt to incorporate subject matter into this application by reference to "post-published patent no. 198 57 683.8" on page 2 line 14 is improper because of lack of a specific international/national patent title. For example, U.S. Patent numbers differ in length and style than those of a PCT, WO, EP, etc. patent.

Appropriate correction is required.

Claim Objections

4. Claims 4-18 are objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim shall not serve as a basis for any other multiple dependent claim. See MPEP § 608.01(n).

Examiner treats claims 4 and 6-18 as being respectively dependent upon only claim 1 in order to further treat the claims. Dependency solely upon independent claim 1 allows for the broadest reasonable interpretation of claims. Claim 5 is being treated as dependent upon claim 3 in order to similarly allow for the broadest reasonable interpretation.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 16 and 17 recite the limitation "the function" both in line 3. There is insufficient antecedent basis for this limitation in the claims.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1-4, 6-7, 9, 12-21, and 23 are rejected under 35 U.S.C. 102(b) as being anticipated by Eastvold et al. (U.S. Patent No. 5,745,268).

As in claim 1, Eastvold et al. discloses a system for protected data transmission in ring-shaped bus systems, comprising:

a control unit which sends output data and checking signals for a control process to peripheral units (Fig. 1 #16; column 9 lines 40-41; column 17 line 46),

a peripheral monitoring unit which has a first transfer unit for monitoring the transmitted data and a second transfer unit for monitoring data to be read back into the control unit (Fig. 1 #34; column 5 lines 20-30; column 9 lines 11-14; column 15 lines 29-44, which discloses monitoring of data for DTU 12, where it is implied that master DTU 34 is functionally equivalent to DTU 12. Examiner notes that the master DTU 34 and monitoring unit 16 in

combination as disclosed in column 9 lines 33-37 may be interpreted as both a "control unit" and a "peripheral monitoring unit".), and

at least one peripheral safety-related unit (Fig. 1 #12) for receiving or transmitting safety-related data, in which data are temporarily stored for output (temporary storage is inherent in order to "monitor" the data; column 15 lines 64-67), which has a checking logic (Fig. 6 #44 and #64) for monitoring the temporarily stored data and an output unit for outputting the temporarily stored data (column 5 lines 59 through column 7 line 55; column 9 lines 40-52),

the temporarily stored data being monitored by the checking logic in such a manner that, in the case of a fault, a safe state of the output unit for the control process is initiated (column 13 lines 32-57; column 15 lines 35-39, where the dropping of invalid data packets [fault] ensure a "safe state of the output unit for the control process" because corrupt data will not be continued through the ring),

the first transfer unit monitoring the data sent out by the control unit, in such a manner that, in the case of a fault, release data for the peripheral safety-related unit are suppressed or deleted so that the faulty data do not reach the control process, particularly data transmission sequences, wherein the input data of the peripheral safety-related unit and its temporarily stored data are read back via the second transfer unit (Fig. 1 #34; column 5 lines 20-30; column 9 lines 11-14; column 15 lines 29-44. Because master DTU 34 functions as any DTU 12, faulty data would be deleted as disclosed in column 15 lines 35-39).

As in claim 2, Eastvold et al. discloses the temporarily stored data and the input data of the peripheral safety-related unit are provided to the peripheral monitoring unit (column 5 lines 27-32).

As in claim 3, Eastvold et al. discloses the peripheral safety-related unit reads back the temporarily stored data via a bus unit (Fig. 6 #54; column 5 lines 27-32; column 6 lines 55-56).

As in claim 4, Eastvold et al. discloses the peripheral safety unit has a buffer (column 14 lines 17-19, where it is implied data packet 120 is being stored before being sent) which is read back by a bus unit (Fig. 6 #54; column 5 lines 27-32; column 6 lines 55-56) and is thus checked by the peripheral monitoring unit even before release to the control process (column 15 lines 35-39), particularly of data transmitted via the bus, via the output logic (Fig. 6 PAL 20RA10) with the output signal (data being sent).

As in claim 6, Eastvold et al. discloses the checking logic decides whether the data stored in the buffer are output via the output logic (column 13 lines 48-53).

As in claim 7, Eastvold et al. discloses the checking logic releases or deletes the temporarily stored data (column 13 lines 48-57; column 15 lines 32-39; it is interpreted that the hardware and software determining the validity of the data is done by the microprocessor 44 and/or the FPGA 64 [checking logic]).

As in claim 9, Eastvold et al. discloses the peripheral monitoring unit overwrites data of the SPC (SPC as described in Applicant's specification is interpreted as the "control unit." column 11 lines 54-63, where the revision information implies overwriting of data. The combination of the master DTU 34 and monitoring unit 16 as disclosed in column 9 lines 33-37 interpreted as both a "control unit" and a "peripheral monitoring unit" allows for the overwriting of "data of the SPC" by the "peripheral monitoring unit".).

As in claim 12, Eastvold et al. discloses the peripheral safety-related unit only becomes active if it has received an agreement for the data of the output unit via the checking unit (column 15 lines 35-39, where the dropping of the invalid [disagreeing] packets prevents further processing [activity]).

As in claim 13, Eastvold et al. discloses the peripheral units themselves can perform logic operations and thus a higher process speed is achieved in the overall combined operation (column 5 line 67, where it is inherent to a microprocessor to perform logic operations).

As in claim 14, Eastvold et al. discloses the peripheral monitoring unit itself handles control functions and thus a combined operation with a safety control unit is produced (column 6 lines 1-2, sample control module; column 9 lines 33-37).

As in claim 15, Eastvold et al. discloses the peripheral safety-related unit manages with standard non-safety-related modules for the bus traffic and does not need any safety-related modules (Fig. 2; column 4 lines 38-44).

As in claim 16, Eastvold et al. discloses the function is operable in standard bus systems and is capable of operating without additional installation of further bus systems or serial components (column 4 lines 44-50).

As in claim 17, Eastvold et al. discloses the function can be installed subsequently by adding the peripheral monitoring unit and exchanging normal peripheral units for peripheral safety-related units (column 5 lines 2-11 and column 17 lines 37-45, where the disclosed configuration implies the ability to exchange units of any type without sacrificing functionality).

As in claim 18, Eastvold et al. discloses the safety function of the system can also be subsequently expanded by adding hardware elements or software modules (column 4 line 64 through column 5 line 11 and column 17 lines 37-45).

As in claim 19, Eastvold et al. discloses a peripheral monitoring unit (Fig. 1 #34; column 5 lines 20-30; column 9 lines 11-14; column 15 lines 29-44, which discloses monitoring of data for DTU 12, where it is implied that master DTU 34 is functionally equivalent to DTU 12. Examiner notes that the master DTU 34 and monitoring unit 16 in combination as disclosed in column 9 lines 33-37 may be interpreted as both a "control unit" and a "peripheral monitoring

unit".) checks the data sent out by a control unit (Fig. 1 #16; column 9 lines 40-41; column 17 line 46) and examines them for faults and in the case of a fault suppresses or deletes release data for a peripheral safety-related unit so that a fault cannot reach the control process, particularly not data transmission sequences (Fig. 1 #34; column 5 lines 20-30; column 9 lines 11-14; column 15 lines 29-44. Because master DTU 34 functions as any DTU 12, faulty data would be deleted as disclosed in column 15 lines 35-39).

As in claim 20, Eastvold et al. discloses temporarily stored data (column 15 lines 66-67) of the peripheral safety-related unit are read via a bus unit (Fig. 6 #54; column 15 lines 62-63) and are monitored and detected by a checking logic (column 13 lines 48-57; column 15 lines 32-39; it is interpreted that the hardware and software determining the validity of the data is done by the microprocessor 44 and/or the FPGA 64 [checking logic]).

As in claim 21, Eastvold et al. discloses in which a safe state of data transmission, particularly of the output unit, is initiated by the checking logic (column 13 lines 32-57; column 15 lines 35-39, where the dropping of invalid data packets [fault] ensure a "safe state of data transmission" because corrupt data will not be continued through the ring).

As in claim 23, Eastvold discloses the checking logic releases or deletes the temporarily stored data (column 13 lines 48-57; column 15 lines 32-39).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 5 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Eastvold et al. in view of Dawson (U.S. Patent No. 5,390,188).

As in claim 5, Eastvold et al. teaches of a peripheral safety device. However, Eastvold et al. fails to teach the peripheral safety-related unit comprises a further bus unit so that the peripheral safety-related unit has redundant input channels and thus redundantly monitors the connected control process and can detect a fault. Dawson teaches of a unit with two input channels for fetching data redundantly in order to detect a fault (Fig. 10 #212 and 312; column 21 line 44 through column 22 line 10).

It would have been obvious to a person skilled in the art at the time the invention was made to have included redundant inputs for fault detection as disclosed by Dawson in the invention of Eastvold et al. This would have been obvious because including a reference (column 21 line 60) for comparison with incoming data enhances fault detection.

As in claim 22, Eastvold et al. discloses a peripheral safety-related unit in a system for protected data transmission in ring-shaped bus systems comprising

a buffer in which the output data are stored before their release (column 14 lines 17-19, where it is implied data packet 120 is being stored before being sent),

an output logic via which the temporarily stored data are output (Fig. 6 PAL 20RA10),

a checking logic which decides whether the data stored in the buffer are output via the output logic (column 13 lines 48-53), and

output data of a peripheral monitoring unit for read-back (Fig. 1 #34; column 5 lines 20-30; column 9 lines 11-14).

However, Eastvold et al. fails to teach of redundant input channels. Dawson teaches of two bus units (Fig. 10 #340 and 350), to forward the output data of a bus unit (#340 which acts as a buffer) also to the input section of the other bus unit (#350) in order to be able to fetch information from the control process via redundant input channels (Fig. 10 #310).

It would have been obvious to a person skilled in the art at the time the invention was made to have included redundant input channels for fault detection as disclosed by Dawson in the invention of Eastvold et al. This would have been obvious because including a reference (column 21 line 60) for comparison with incoming data enhances fault detection.

* * *

8. Claims 8, 10-11, and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Eastvold et al. in view of Cawley (U.S. Patent No. 5,361,334).

As in claim 8, Eastvold et al. teaches the peripheral monitoring unit with the first transfer unit is capable of deleting the data for the peripheral safety-related unit. However, Eastvold et al. fails to teach of manipulating the data. Cawley teaches of manipulating the data (column 9 lines 7-10).

It would have been obvious to a person skilled in the art at the time the invention was made to have included manipulation of data as taught by Cawley via a similar CRC checking method (column 8 lines 44-48) as disclosed by Eastvold et al. This would have been obvious because the manipulation method of Cawley allows for fast processing of data in a fault management environment (column 9 lines 21-22).

As in claim 10, Eastvold et al. teaches the limitations of claim 1, including a peripheral safety-related unit. However, Eastvold et al. fails to teach agreement to a data output from a unit is prevented by the overwriting of the data. Cawley teaches data output from a unit is prevented by the overwriting of data (column 9 lines 4-21, where faulty data is discarded when it reaches its destination [prevention of further output at the destination unit] and the correct copy will take its place [overwriting]. Because the units are in a ring network, it is implied that the correct copy will then be passed on to a following node, preventing further output of corrupt data.).

It would have been obvious to a person skilled in the art at the time the invention was made to have included prevention of corrupt output and overwriting of data as taught by Cawley in the invention as disclosed by Eastvold et al. This would have been obvious because the

manipulation method of Cawley allows for fast processing of data in a fault management environment (column 9 lines 21-22).

As in claim 11, Eastvold et al. teaches the limitations of claim 1, including checking logic (present in DTU 12) receiving information from the peripheral monitoring unit (master DTU 34). However, Eastvold et al. fails to teach the checking logic receives from the peripheral monitoring unit an information item which prevents a faulty output. Cawley teaches of an information item preventing faulty output (column 8 lines 44-49 and column 9 lines 18-21, where the appending of a check value or CRC is interpreted as an "information item" and the "prevention" is accomplished by the discarding of packets).

It would have been obvious to a person skilled in the art at the time the invention was made to have included an information item as disclosed by Cawley in order to prevent faulty output in the system of Eastvold et al. This would have been obvious because the manipulation method of Cawley allows for fast processing of data in a fault management environment (column 9 lines 21-22).

As in claim 24, Eastvold et al. teaches of checking logic (present in DTU 12) and a peripheral monitoring unit (master DTU 34). However, Eastvold et al. fails to teach the checking logic receives information from the peripheral monitoring unit in order to prevent a faulty output. Cawley teaches of receiving information to prevent faulty output (column 8 lines 44-49 and column 9 lines 18-21, where the appending of a check value or CRC is interpreted as an "information item" and the "prevention" is accomplished by the discarding of packets).

It would have been obvious to a person skilled in the art at the time the invention was made to have included information as disclosed by Cawley in order to prevent faulty output in the system of Eastvold et al. This would have been obvious because the manipulation method of Cawley allows for fast processing of data in a fault management environment (column 9 lines 21-22).

Conclusion

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Paul Contino whose telephone number is (571) 272-3657. The examiner can normally be reached on Monday-Friday 7:30 am - 5:00 pm, first Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Beausoliel can be reached on (571) 272-3645. The fax phone number for the organization where this application or proceeding is assigned is 571-273-3657.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

PFC
December 14, 2004

SCOTT BADERMAN
PRIMARY EXAMINER